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Docket No.: 09626/100L207-US1
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Tetsuya Atsumi et al.

Customer No.: 07278

Application No.: 09/473,495

Art Unit: 1733

Filed: December 28, 1999

Examiner: J. R. Fischer

For: LIGHT-WEIGHT SHAFT FOR GOLF CLUBS

DECLARATION BY INVENTOR TETSUYA ATSUMI UNDER 37 C.F.R. 1.132

MS Non-Fee Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I, Tetsuya Atsumi hereby declare:

1. I am a citizen of Japan and I am over 21 years of age.

2. I am a named joint inventor of the above-captioned patent application and submit this declaration in support of the patentability of pending claims 20-22.

3. I tested golf club shafts manufactured by forming a first reinforcement layer from a first fiber material; forming a first angled layer by bonding second and third fiber materials; forming a first straight layer from a fourth fiber material; forming a second angled layer

from fifth and sixth fiber material, said fifth and sixth materials having fibers aligned along a single direction and said fifth and said sixth fibers only extending along an entire length of said second angled layer; bonding said fifth and sixth fiber materials together to form said second angled layer, such that said fibers of said fifth and sixth material form a second angle in the range of from 70-150 degrees and sad second angled layer has a thickness in the range of from 0.04 to 0.1 mm; and forming a second straight layer from a seventh fiber material forming a second reinforcement layer from an eighth fiber material. Further, manufacturing the golf club shaft by wrapping said first reinforcement layer around said mandrel such that said fibers of said first reinforcement layer are aligned 90 degrees with respect to said longitudinal axis; wrapping said first angled layer around said first reinforcement layer such that said first angle of said fiber material of said first angled layer is bisected by said longitudinal axis; wrapping said first straight layer around said first angled layer such that said fibers of said first straight layer are aligned with said longitudinal axis; wrapping said second angled layer around said first straight layer such that said second angle of said fiber material of said second angled layer is bisected by said longitudinal axis; wrapping said second straight layer around said second angled layer such that said fibers of said second straight layer are aligned with said longitudinal axis; and wrapping second reinforcement layer around said second straight layer to form a layered wrap, such that said fibers of said second reinforcement layer are aligned with said longitudinal axis. I measured the torsion angle, crushing strength, torsional strength and three point bending for various angles of the second angular layer. I submit the results of the tests in Table 1, attached hereto as Exhibit A.

4. It is my opinion that the layering conventions and the angles of the second angled layer yielded unexpected results in the form of a lightweight golf club shaft with particular strength and flexibility. These shafts had surprisingly unexpected torsion angle, crushing strength, torsional strength and three point bending for a golf club shaft weighing 37 grams.

5. I do not believe that any of the cited references disclose a golf club shaft possessing a weight of 30 to 40 grams with the strength and flexibility characteristics shown in Table 1. I do not believe that any of the cited references disclose the layering scheme and weights with the strength and flexibility characteristics of my invention. The improvement in the strength and flexibility of a lightweight golf club shaft as shown in Table 1 was unexpected and surprising.

6. I further declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true. I further declare that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States code, and that such willful false statements may jeopardize the validity of the instant application or of any patent issued thereupon.

Respectfully submitted,

Date: Jan. 21, 2004

Tetsuya Atsumi

Tetsuya Atsumi

TABLE 1

	Shaft Weight [g]	Stack Angle for Second Angled Layer	Torsion Angle lb - ft [°]	Crushing Strength [kgf/10 mm]				Torsion Strength [kgf.m .°]	Three Point Bending [kgf]		
				a Butt to 10 mm	b Butt to 100 mm	c Butt to 200 mm	d Butt to 300 mm		A Tip to 175 mm	B Tip to 525 mm	C Butt to 175 mm
A	37	±20°	5.5	5.8	6.0	5.6	6.1	156.9	62.7	40.7	39.3
B	37	±45°	5.2	8.5	8.4	8.5	7.8	147.5	60.7	48.3	43.3
C	37	±60°	5.4	8.8	9.2	9.5	9.6	179.3	62.3	49.7	46.3
D	37	±70°	5.5	11.7	11.4	11.8	10.6	171.4	60.7	51.7	51.7
E	37	±75°	5.7	12.2	10.9	10.3	12.1	156.6	64.7	52.3	50.3
F	37	±80°	5.8	10.6	11.6	11.4	11.8	159.4	62.3	51.3	54.0